

## Economics of Kesar mango production in export zone of Marathwada region of Maharashtra

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### ABSTRACT

Kesar is one of the finest varieties of Indian mangoes and is rated to be the best at the home and abroad. Productivity is influenced due to social and economic factors. The study is based on farm level primary data collected from 60 sample kesar mango growers of export zone of Marathwada region, who registered their orchard for export. The data pertained to year 2010-11. It is observed from the analysis that, per hectare hired human labour required for maintenance of adult mango orchard was 147.78 man days while family human labour was 22.89 man days. The per hectare total cost of cultivation (cost C) of adult mango orchards worked out Rs. 256823.20 in which share of Cost A was 56.04 per cent and Cost B was 98.93 per cent. Kesar mango production was labour as well as capital intensive. It was observed that per hectare gross return was Rs. 403250.00 from the kesar mango orchard. Output input ratio was 1.57 from kesar mango orchard which indicated the mango production was profitable in the study area.

Effect of heavy rains, winds and hail stone during flowering and fruit setting time, Problem of scarcity of labour with high wage rate, irregular electricity supply were formed the crux of the cultivation problems of growers. This may be partly due to the reason that kesar mango cultivation was subsidiary enterprise of the sample farmers and beings perennial crop. Suggestions given by kesar mango growers in regard to production of kesar mango were the provision of electricity supply on time, state government should provide margin money at the time of establishment on minimum interest, state department of agriculture should provide the drip irrigation facilities on lower cost.

**Key words:** AEZ, Kesar mango, costs, returns, profitability.

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### INTRODUCTION

Fruit crops cultivation gives better yield and more money as compared to field crops from the same piece of land; therefore farmer also would like to shift from field crops to high value horticulture crops. Mango (*Mangifera indica* L.) known as 'king of fruits' belongs to family Anacardiaceae, originated in South East Asia. It is the leading fruit crop of India. The mango is the pride of the garden the choicest fruit of India, other fruits content to eat when ripe, but the mango is consumed in all stages of growth. Raw fruits are used for making chutney, pickles and juices. The riped fruits are used for preparing several products like squashes, syrups, nectars, jams and jellies. The mango kernel also contains 8-10 per cent good

quality fat which can be used for soap and also as a substitute for cola in confectionery. Besides delicious taste, excellent flavour and attractive fragrance, it is rich in vitamin A and C.

Kesar is one of the finest varieties of Indian mangoes and is rated to be the best at the home and abroad. The fruits are very attractive, large sized and oval in shape. The taste is superb with an excellent sugar/acid blend. It is favorite fruit of the processing industries since; it retains its characteristics flavour even after processing. Kesar variety released from Balashad district of Gujrat. Maharashtra state is an important mango growing state in India. In 2010-11, Maharashtra has the area of 0.46 Mha with production of 0.71 Mt with productivity 1.6 tonns per hectare. The important mango growing districts in Maharashtra state are Ratnagiri, Sindhudurg, Raigad, Ahmadnagar, Nashik, Aurangabad, Jalana, Beed, Parbhani, Latur and Osmanabad. Among this Aurangabad, Beed, Latur, Ahmadnagar and Nashik districts are recognized as export zone for kesar variety of mango by government of Maharashtra.

In production technology important inputs are labour, chemical fertilizers, manure, irrigation, planting material and plant protection. It is necessary to know the cost of cultivation of the crops. It can be helpful to improve the profitability of the crop by extending the technical advice and supply of inputs in time to the cultivations view. Attempt has been made in present investigation to study the input utilization, costs, returns and relative profitability of Kesar mango in export zone of Marthwada district.

## METHODOLOGY

Three stage purposive sampling design was used to select Kesar mango farmers. In first stage, Agriculture Export Zone (AEZ) of kesar mango was selected. In second stage, districts of Marathwada region *viz.* Aurangabad, Jalana, Beed and Latur which comes under AEZ of Kesar mango were selected. Apart from these districts Parbhani and Osmanabad districts were also selected since, both the districts come under Jalana and Latur AEZ districts respectively. In third stage, a list of kesar mango growers whose orchards were registered for exports was obtained from MSAMB (Maharashtra State Agriculture Marketing Board). Finally, 60 kesar mango growers were selected purposively from selected districts. Data pertains to the year 2010-11. Data were converted to per hectare basis in tabular form, statistical tools like arithmetic mean, percentage and ratio were used for accounting the cost and returns in Kesar mango production. The cost concepts like Cost-A, Cost-B, Cost-C were used for cost evaluation and to estimate profitability in Kesar mango production. Cost-A includes the items namely, hired human labour, machine labour, planting material, fertilizer, manure, plant protection, land revenue, interest on working capital and depreciation of asset. Cost-B comprises of the Cost-A plus rental value of land and interest on fixed capital. Cost-C includes the Cost-B plus family labour cost. Technique like tabular analysis, frequency and percentage method were used to analyze the data in present study.

## RESULTS AND DISCUSSION

### I. Per hectare physical inputs and outputs in kesar mango production

Physical quantities of inputs used for maintenance of adult mango orchard were estimated and presented in Table 1. It is observed from the table that, per hectare hired human

labour required for maintenance of adult mango orchard was 147.78 man days while family human labour was 22.89 man days. Since the extent of mechanization is more on the selected orchards, the total bullock labour was very meager that is 1.19 pair days but the use of machine power was comparatively high 2.87 hrs compared to bullock labour. Quantity of manure applied to the orchard was 331.83 q. The per hectare quantities of nitrogen, phosphorus and potash used by mango growers were 998.45kg, 935.57kg and 724.33 kg respectively on the selected farms. The total number of irrigations given was 22.30 in kesar mango orchard while the plant protection chemicals use was 16.39 liter per hectare.

Table 1. Per hectare physical inputs and output of Kesar mango orchard

Sr.No	Particulars	Unit	Physical Quantity
<b>INPUT</b>			
1.	Hired human labour	man day	147.78
2.	Bullock labour	Pair day	1.19
3.	Machine labour	Hour	2.87
4.	Nitrogen	Kg	998.45
5.	Phosphorus	Kg	935.57
6.	Potash	Kg	724.33
7.	Manure	Q	331.83
8.	Irrigation	No	22.30
9.	Plant protection	L	16.39
10.	Family human labour	man day	22.89
<b>OUTPUT</b>			
11.	Kesar mango production	Q	80.65

It is also observed from the Table 1 that kesar mango production was 80.65 quintals per hectare. The physical inputs and output can be converted into monetary terms to determine the cost of cultivation per hectare. The success of any enterprise in agriculture can be judged on the basis of economic benefits secured by the entrepreneur from the enterprise. Per hectare cost of cultivation of kesar mango production was calculated and presented in Table 2. It is observed from that the per hectare total cost of cultivation (Cost C) of adult mango orchards worked out Rs. 256823.20 in which share of Cost A was 56.04 per cent and Cost B was 98.93 per cent. Among the various items of expenditure, the proportionate share of rental value of land predominant as 26.15 per cent and irrigation 15.63 per cent in kesar mango production followed by amortization value 13.89 per cent. Among remaining expenditures, proportionate share of phosphorus was 8.65 per cent followed by hired human labour (6.91 per cent), manure (6.45 per cent), interest on working capital (5.70 per cent) and nitrogen (5.07 per cent). It is obvious that other items of expenditure showed minor proportion. It is observed that kesar mango production was labour as well as capital intensive.

Table 2 Per hectare cost of cultivation of Kesar mango production.

Sr.No.	Particular	Amount (Rs.)	Percent
1.	Hired human labour	17733.60	6.91
2.	Bullock labour	297.50	0.12
3.	Machine labour	861.00	0.33
4.	Nitrogen	13019.79	5.07
5.	Phosphorus	22219.79	8.65
6.	Potash	6757.99	2.63
7.	Manure	16591.50	6.45
8.	Irrigation	40140.00	15.63
9.	Plant protection	4097.50	1.60
10.	Land revenue	47.25	0.02
11.	Incidental charges	209.47	0.08
12.	Interest on working capital	14637.05	5.70
13.	Depreciation on asset	7317.92	2.85
14.	Cost-A ( $\Sigma$ item 1 to 13)	143930.40	56.04
15.	Rental value of land	67161.08	26.15
16.	Interest on fixed capital	7317.92	2.85
17.	Amortized cost	35667.05	13.89
18.	Cost-B ( $\Sigma$ Item 14 to 17)	254076.40	98.93
19.	Family human labour	2746.80	1.07
20.	Cost-C ( $\Sigma$ Item 18 to 20)	256823.20	100.00

## II. Profitability of kesar mango production

The per hectare profitability of mango orchards was worked out by deducting different cost *viz.* Cost A, Cost B, Cost C and per quintal cost of production from the output and presented in Table 3. It was observed that per hectare gross return was Rs. 403250.00 from the kesar mango orchard. It was clear from table that farm business income, family labour income and net profit was Rs. 259319.60, Rs. 149173.60 and Rs. 146426.80 respectively from the kesar mango orchard. Output input ratio was 1.57 from kesar mango orchard which indicated the mango production was profitable in the study area.

Sr.No.	Particular	Amount (Rs.)
1.	Gross returns	403250.00
2.	Cost-A	143930.40
3.	Cost-B	254076.40
4.	Cost-C	256823.20
5.	Farm business income	259319.60

	(Gross returns minus Cost-A)	
6.	Family labour income (Gross returns minus Cost-B)	149173.60
7.	Net profit (Gross returns minus Cost-C)	146426.80
8.	Output-Input ratio (Gross returns divided by Cost-C)	1.57
9.	Per quintal cost of production (Cost-C dividing through by quantity of main product)	3184.42

Table 3. Per hectare profitability of Kesar mango orchard

### III. Constraints faced by growers in production of Kesar mango

Constraints encountered in production of kesar mangoes by the mango growers in the study area were studied and are presented in Table 4. The major constraints experienced in production of kesar mango growers in the study area as follows. All the kesar mango growers (100 per cent) expressed the major constraints in production was effect of heavy rains, winds and hail stone during flowering and fruit setting time. Majority of kesar mango growers that is 85.00 per cent expressed problem of scarcity of labour with high wage rate. Irregular electricity supply was important constraint expressed by 83.33 per cent of kesar mango growers. The other constraints in mango production expressed by the farmers were non availability quality grafts (80.00 per cent), high cost of inputs (76.67 per cent), high incidence of pest and diseases (70.00 per cent) and lack of storage facilities near production area (66.67 per cent). Some of the farmers have also faced constraints like lack of technical guidance (58.33 per cent), unavailability of margin money at the time of establishment (51.67 per cent) and inadequate irrigation facility (43.33 per cent).

Table 4. Constraints faced by Kesar mango growers in production

	Constraints	Frequency (n = 60)	Percent
1.	Non availability of quality grafts	48	80.00
2.	Scarcity of labours with high wage rates	51	85.00
3.	At the time of establishment margin money is not available	31	51.67
4.	High incidence of pest and diseases	42	70.00
5.	Inadequate irrigation facility	26	43.33
6.	Problem of electricity supply	50	83.33
7.	High cost of inputs	46	76.67
8.	Lack of technical guidance	35	58.33
9.	Heavy rains, winds and hail stone during flowering and fruit setting time	60	100.00
10.	Lack of storage facilities near production areas	40	66.67

#### IV. Suggestions by growers in kesar mango production

Suggestions of kesar mango growers in regard to production of kesar mango were calculated in the form of frequency and percentage and presented in Table 5. It was observed, about 98.33 per cent of kesar mango growers suggested the provision of electricity supply on time. State government should provide margin money at the time of establishment on minimum interest and State department of agriculture should provide the drip irrigation facilities on lower cost were suggested by 93.33 per cent kesar mango growers. Majority of farmers suggested mechanization on farm (91.67 per cent) followed by provision of cold storage near production area (90.00 per cent). Provision of nursery for improved planting material were suggested by 75.00 per cent. Some of the farmers also suggested like provision of training program for pest and disease control (68.33 per cent), effective adoption of training system of extension on field level (46.67 per cent).

**Table 5. Suggestions given by Kesar mango growers related to production**

Sr. No.	Suggestions	Frequency (n = 60)	Percent
1.	Provision of nursery for improved planting Material	45	75.00
2.	Mechanization used in farm	55	91.67
3.	State government should provide margin money at the time of establishment on minimum interest	56	93.33
4.	Provision of training program for pest and disease control	41	68.33
5.	Conserve the water by constructing farm pond, earthen pot technique and State department of agriculture should provide the drip irrigation facilities on lower cost	56	93.33
6.	Electricity supply on time	59	98.33
7.	Fertilizers, plant protection chemicals should provided at lower cost	48	80.00
8.	Effective adoption of training system of extension on field level	28	46.67
9.	Whenever disaster condition, recovery amount should be given by government	45	75.00
10.	Provision of cold storage near production areas.	54	90.00

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